

REMARKS

I. INTRODUCTION

In response to the Office Action dated August 29, 2008, claims 1 and 38 have been amended. Claims 1, 3-9 and 36-41 remain in the application. Entry of these amendments, and re-consideration of the application, as amended, is requested.

II. CLAIM AMENDMENTS

Applicant's attorney has made amendments to the claims as indicated above. These amendments are fully supported by the specification as filed and introduce no new matter. Specification support for embodiments of the invention comprising a lectin that "binds a compound produced by a microorganism capable of forming a biofilm on the surface of the medical device so as to enhance attachment of the microorganism to the composition comprising the lectin" is found for example in paragraphs [0020]-[0022] and [0032].

III. PRIOR ART REJECTIONS

In paragraph (1) of the Office Action, claims 1, 3-6, 8-9, and 37-41 were rejected under 35 U.S.C. §102(b) as being anticipated by Gu et al., "World Journal of Microbiology and Biotechnology, 17: 173-179 (2001)" (Gu). In paragraph (2) of the Office Action, claim 7 was rejected under 35 U.S.C. §103(a) as being unpatentable over Gu as applied to claim 1, and further in view of Schrier et al., U.S. Patent No. 6,197,598 (Schrier). In paragraph (3) of the Office Action, claim 36 is rejected under 35 U.S.C. §103(a) as being unpatentable over Gu as applied to claim 1, and further in view of Cioanta et al., U.S. Publication No. 2002/0082556 (Cioanta).

Applicant respectfully traverses these rejections. In the sections below, Applicants' attorney reviews the properties of different lectins, the invention disclosed in the Gu, and the invention recited in the claims as amended hereinabove. Applicants' attorney then identifies the reasons why: (1) the Gu disclosure cannot anticipate the invention recited in the amended claims; and (2) the Gu disclosure cannot be combined with any other reference (e.g. Schrier and/or Cioanta) to render the invention recited in these amended claims obvious.

1. LECTINS, THE CITED REFERENCES AND THE CLAIMED INVENTION

A. LECTINS

As is known in the art, lectins are a diverse group of proteins found principally in plant seeds that are observed to exhibit diverse properties.¹ For example, some lectins can cause the agglutination of blood cells while other lectins can stimulate the proliferation of lymphocytes. Similarly, some lectins are observed to block adhesion of bacteria on surfaces while other lectins are observed to enhance the adhesion of bacteria on surfaces.

B. THE GU REFERENCE

Gu et al., “World Journal of Microbiology and Biotechnology, 17: 173-179 (2001)” discloses a catheter having a surface coated with a polymer comprising lectins and/or a combination of Ag⁺ and a lectin coating. The abstract of Gu teaches that polymers comprising lectins alone show inhibition of bacterial attachment. At page 177, Gu teaches that the promising results are due to surface adhesion blockage by lectins and that the mechanism is believed to involve the blocking of binding sites by lectins that are otherwise available for bacterial exopolysaccharides.

C. THE CLAIMED INVENTION

The claims as amended hereinabove focus on embodiments of the invention that comprise medical devices having a surface coated with a composition comprising a lectin having a specific subset of properties, namely an ability to bind a compound produced by a microorganism capable of forming a biofilm on the surface of the medical device so as to enhance attachment of the microorganism to the composition comprising the lectin. In this embodiment of the invention, the lectin is further disposed within a biodegradable polymer composition that can slough away from the surface of the medical device when the lectin is bound to the compound produced by a microorganism, so as to inhibit formation of a biofilm on the surface of the medical device.

2. RESPONSE TO REJECTIONS UNDER 35 U.S.C. 102(b)

All independent claims have been amended hereinabove to further focus on embodiments of the invention that comprise specific types of lectins, namely those lectins having an ability to bind

a compound produced by a microorganism capable of forming a biofilm on the surface of the medical device so as to enhance attachment of the microorganism to the composition comprising the lectin. As disclosed for example in paragraph [0022] and shown in FIG 1 of the specification, in such embodiments of the invention this lectin-biofilm interaction localizes a biofilm forming organism to the surface of the medical device. As recited in the claims, in this embodiment of the invention, the polymer matrix is biodegradable so that the biofilm bound by the lectin sloughs away from the surface of the medical device so as to inhibit formation of a biofilm on the surface of the medical device.

A detailed analysis of the Gu disclosure shows that it teaches the use of lectins having completely different properties than those recited in the claims as amended hereinabove. In particular, Gu teaches that their system functions by using lectins to BLOCK ADHESION to a surface and that this system's mechanism of action is believed to involve the blocking of binding sites by lectins that are otherwise available for bacterial exopolysaccharides (see, e.g. page 177, second column). Consequently, Gu teaches the use of lectins having completely different and opposite properties from those required by the lectin recited in Applicant's claims as amended hereinabove, namely an ability to ENHANCE ADHESION of the microorganism to the surface.

As noted in M.P.E.P. 2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single art reference. Because the Gu disclosure fails to teach or suggest a medical device coated with lectins having an ability to bind a compound produced by a microorganism capable of forming a biofilm on the surface of the medical device so as to enhance attachment of the microorganism to the surface (as recited in claims 1 and 38 as amended hereinabove), this disclosure cannot destroy the novelty the invention recited in these claims. For this reason, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. §102(b).

3. RESPONSE TO REJECTIONS UNDER 35 U.S.C. §103(a)

As noted for example in KSR v. Teleflex, 550 U.S. ___, 127 S. Ct. 1727 (2007), in determinations of obviousness under 35 U.S.C. §103(a), there must be some motivation to combine references. M.P.E.P. 2145(X)(D)(2) explicitly notes however, that references cannot be combined in

¹ See, e.g. the definition of lectins as found in the ACADEMIC PRESS DICTIONARY OF SCIENCE AND

situations where a reference teaches away from their combination. In this context, a reference teaches away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the Applicant. In re Gurley, 27 F.3d 551, 553, 31 U.S.P.Q.2d 1130 (Fed. Cir. 1994).

As noted above, Gu teaches medical devices coated with lectins designed to block bacterial adhesion, and for example that these lectins are believed to function by blocking binding sites on the surface of medical devices that are otherwise available for bacterial exopolysaccharides. This is the opposite direction from the path that was taken by the Applicant. Consequently, this reference teaches away the invention recited in Applicants' claims, one that comprises lectins that exhibit a specific subset of properties, namely an ability to bind a compound produced by a microorganism capable of forming a biofilm on the surface of the medical device so as to enhance attachment of the microorganism to the composition comprising the lectin. Because Gu teaches away from the invention recited in Applicant's claims as amended hereinabove, it cannot be combined with any other reference (e.g. Schrier and/or Cioanta) in a manner that renders the invention recited in these amended claims obvious. For this reason, the Applicant respectfully requests the withdrawal of the rejection under 35 U.S.C. §103(a).

Moreover, the various elements of Applicants' claimed invention together provide operational advantages over Gu, Schrier and/or Cioanta. In addition, Applicants' invention solves problems not recognized by Gu, Schrier and/or Cioanta. Thus, Applicants submit that independent claims 1 and 38 are allowable over Gu, Schrier and/or Cioanta. Further, dependent claims 3-9, 36, 37, and 39-41 are submitted to be allowable over Gu, Schrier and/or Cioanta in the same manner, because they are dependent on independent claims 1 and 38 respectively, and thus contain all the limitations of the independent claims. In addition, dependent claims 3-9, 36, 37, and 39-41 recite additional novel elements not shown by Gu, Schrier and/or Cioanta.

IV. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain

that can be resolved in a telephone interview, the Examiner is urged to call Applicant's undersigned attorney.

Respectfully submitted,

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